

S Y N C	(0101010101010101) is always an invisible first field in every packet.
F L A G	\$7E is the flag (0111 1110). The \$ signifies that the next characters are hexadecimal digits.
A D R	(XXXXXX00) A 6 bit ID destination adr. Both adr fields include 2 control bits. (YYYYYY10) A 6 bit ID of source adr.
C T L	\$BF is an 8 bit control code.
D A T A	From 0 to 128 bytes of data can be included in the data field of each packet. There are some control packets which will carry no data.
F C S	A 16 bit field check sequence allows verification of errorless data.
F L A G	SLAPR PROTOCOL NEWSLETTER OF THE ST. LOUIS AREA PACKET RADIO CLUB

	CONTROL	
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identifies the purpose of the packet

connect BIGGER AND BETTER

We live in these United States where everything seems to have to be bigger and better if it is going to have a future. I don't always believe that it has to be that way. In this case I sincerely hope it will be true with SLAPR PROTOCOL.

You have had Volume I, Number 1 and had a chance to look it over. I hope that you approve. I am well aware that there are many ways in which we will be able to improve upon the first issue. I hope that you have already noted one improvement. We are now able to justify the lines and make each page a little more presentable. It may seem a little thing but it is an improvement. It is my aim that I will be able to point to some special improvement in each issue just as we will be able to point to some improvement in packet operations each time we bring up the subject.

At this early date I see five ways that we can move toward a BIGGER AND BETTER newsletter. We can increase the circulation. We can improve the form and techniques with which it is produced. We can increase the number of articles and the amount of information included. We can improve the quality of the articles and columns. And most exciting, we can develop an electronic newsletter.

At the present we are sending this second issue to all persons in the St. Louis area who have shown interest in packet radio. We are also sending it to many persons who have encouraged packet in their own area, especially those who have encouraged the birthing of SLAPR. The third group to whom we mail is that select group who are kind enough to share their news with us. Beginning with next issue we will continue to send to groups two and three. But group one will change. Group one will now consist of only members of SLAPR. So if we are to improve our SLAPR PROTOCOL through enlarged mailings, we

all need to "get out the vote." If you have not filled out an information blank and paid your \$10 dues for the period July through December, 1982, you can personally contribute to the improvement of SLAPR PROTOCOL. Increased volume will be an improvement.

You have seen the first in a series of improvements that will come as a result of practice and experience and availability of equipment. In addition to justification, it is my hope that you are reading a duplication that has come from a letter quality printer. If not, (This is being written early because of an overseas business and vacation trip and all may not go as planned.) surely number three will be so. What else? Titling, drawings and pictures, your suggestions?

Your executive committee determined that 12 pages was a reasonable number with which to begin. Now it may be time to increase the size of the issues. As interest groups are developed I would welcome a column written by each group. Hardware? Software? LAN? Bulletin board/mailbox? Internet? Satellite?

I think that you will agree that there has been nothing wrong with the quality of the articles in these two issues. But, as Bill said, we're still "struggling...to learn anything and everything." We also have other talent out there that can be tapped.

Best of all, I look forward to the day, and not too far in the future, when we will be able to have the entire newsletter on the bulletin board. I look forward to each of us being able to call it up on the first of each month. Our bulletin board will log each station and feed a list of those stations that have not called it up by the fifteenth. Then mailing will begin only to those who need it. Save time and money! I hope that we will be able to set up the LAN column so that each of you can access it through packet to write a paragraph in each issue.

Well, what else can we do to improve?

disconnect W90FZ, GUS

identifies the beginning or the end of a packet
connect

Greetings all! SLAPR is becoming well known in the short time we have been in existence. Our first newsletter was sent out to over 100 folks, including many people who have actually been involved in the Packet Business for some time. We felt the small additional expense was worth while to get the word out about our existence. It has paid off.

My visit to Phoenix to attend Tucson's monthly meeting was very informative. My thanks to the TAPR gang for all their help in putting together the video tape that was shown at our last meeting. For all those who missed it and would like to view it, let me know and we'll have a "private showing."

The weekend after Phoenix found Bill Reed, WDOETZ, and myself at the ARRL National Convention in Cedar Rapids, Iowa. Disappointed personally by the lack of "Packet Radios" at the convention, I was lifted slightly by ARRL president, Victor Clark's, W4KFC, comments at the ARRL forum. He mentioned Packet Radio as being in the vanguard of new communication techniques. It's comforting to know folks "up at the top" are aware of our endeavors.

Also at Cedar Rapids Bill and I had the opportunity to meet Bill Henry, President of HAL Communications, the folks that build all the fancy computer RTTY gear. He was very interested in our group and internetting the St. Louis area with the folks in Springfield, Chicago and of course, Champaign-Urbana, home of HAL.

Last, but not least, is a subject you will soon hear about if you have not already. At its July 1 open meeting, the FCC instructed its staff to draft a Notice of Proposed Rule Making dealing with a codeless Amateur Radio License. This NPRM will propose simply to remove the code requirement from

the present Technician Class License. It will provide limited access to frequencies above 50 MHz. The present Technician Class License requiring code and permitting access to the Novice bands would also remain in force. However, the NPRM will also explore the possibility of a codeless digital license which would be similar to Canada's Digital Radio Operator Certificate which requires knowledge of digital theory. Such a digital license could either be the only codeless license or it could be concurrent with a codeless Technician license. The NPRM will be released sometime this fall and is only a proposal. There will be a comment period during which all interested parties will have a chance to make their views known to the FCC.

This is a very important proposal which will effect affect all amateur radio operators, not just Packet Radio enthusiasts. I'm sure you'll be hearing a lot about this proposal. What do you think?

73

disconnect Pete, WB9FLW

	GATEWAY	
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station to access long distance communication

connect

TEN METER 1200-BAUD PACKET EXPERIMENT

"On May 31, 1982, Dave Borden, K8MMO, and Paul Rinaldo, W4RI, made a successful two-way 1200-baud packet QSO on 10 meters. We were both using VADCC TNC boards, Bell 202-compatible modems, and ICOM IC-701 hf transcievers in the SSB mode. It was no great DX working between Sterling and McLean, VA. but we learned a few things.

"The path is just long enough (with a couple of mountain ranges in between) that direct 2-meter fm communications has not been possible the times that

it was tried. Normal packet communications is through the 147.81/21 repeater which is sometimes noisy due to two causes: (1) Dave's not-full-quieting signal into the repeater, and (2) some impulse noise. So, on two meters, via the repeater, packet communications is usually good, but numerous retries are sometimes needed due to the impulse noises. Also, experience indicates that packets should be kept short (half a line or so) to minimize the number of necessary retries.

"The 10-meter QSO, which lasted over two hours, wasn't like that. Even though there was quite a bit of background noise on both signals, most packets got through without retries. That's true for long packets as well. Some two line packets made it through on the first try.

"Receiver tuning was a bit critical. The main problem is that neither station had any tuning indicators on the modems. So, the RIT control was set by ear until a packet printed on the screen. Stability was good enough that we were able to stay connected without retuning for around 45 minutes at a time before drift made it necessary to correct the RIT.

"Some of the transmissions sounded lousy, like the proverbial rain-barrel effect, indicating some amount of multipath. The packets printed anyway. Signals were fairly steady in strength with only slow, flat fading at times.

"Plans are to try some 2-meter F1 tests (actually F2j) using 2-meter transcievers in the ssb mode.

"If anyone who is capable of putting a 10-meter signal into the Washington, DC area would like to QSO on this mode, please give W4RI a jingle on 703-734-0878 days or eves."

disconnect thanks to AMRAD NEWSLETTER
July-August 1982
of the AMATEUR RADIO RESEARCH
and DEVELOPMENT CORPORATION

	ADDRESS	
--	---------	--

identifies the source or the destination station
connect BETA TEST SITES

The following are St. Louis area BETA TEST SITES:

Judy Beard KA9NDX
Belleville IL

Tom Nichols WBOTKL
3334 Oxford ST L

Russell A. Beard K9LXV
Belleville IL

Leonard Paris KD9S
Belleville IL

Rusty Beard KA9LMM
Belleville IL

Richard Pagendarm KL7HSY
Florissant MO

Spencer Branham KA0IXI
9926 Lewis & Clark ST L

Gilbert Pauls W0NKJ
Arnold MO

Tom C. Brickey WB0WRK
Festus MO

Michael Prosz KA9HNT
Fairview Hgts IL

Von C. Deeke WB9KDY
Maryland Hgts MO

Bill Reed W0OETZ
13263 Amiot Dr ST L

Ed Dillon KA0AYO
Chesterfield MO

Richard Ridenour KFOZL
9 Lake Pembroke Dr. ST L

Pete Eaton WB9FLW
Edwardsville IL

John Roberts N0DZI
8219 Braddock ST L

Charles Gillory W5CAT
Edwardsville IL

Frank Spavle KA0NSO
7073 Spavle Ln ST L

Gus Kuether W90FZ
Edwardsville IL

Tom Vogel WAOKGU
Hazelwood MO

Scott Kuether KA9AKM
Edwardsville IL

Leslie Welch KA9KAY
Belleveille IL

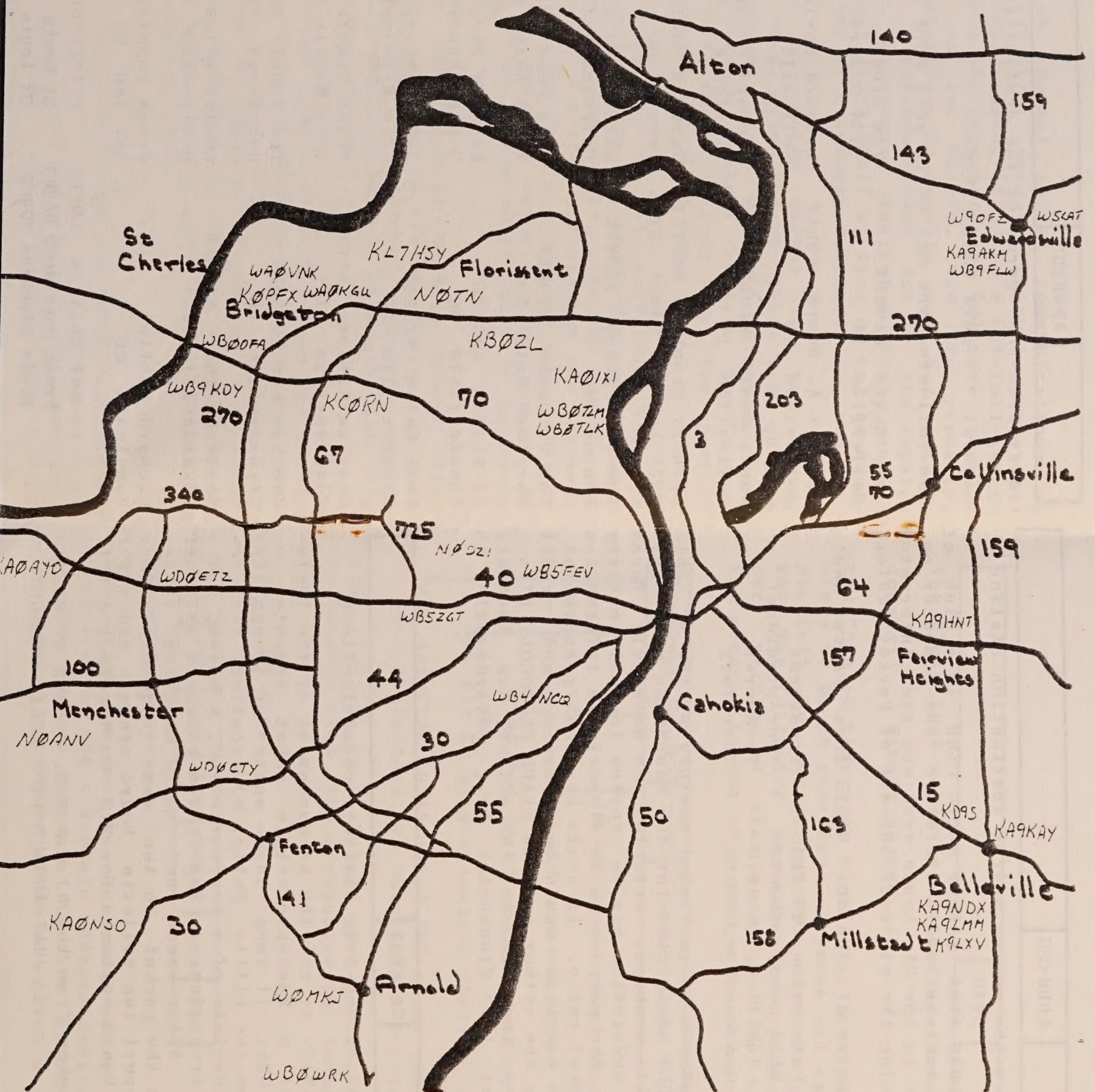
Richard Martin
Hazelwood MO

Frank Wesslak KCORN
St. Ann MO

Mel Whitten K0PFX
Frank Goeringer N0DVS
Ernie Stephens N0BKH

Bridgeton MO
St Louis MO
St Louis MO

St Louis Area Packet Network



	ADDRESS	
--	---------	--

identifies the source and/or destination station

The ST LOUIS AREA PACKET RADIO CLUB is a club of and for amateur radio operators and computer enthusiasts in the St. Louis area who are interested in advancing the state-of-the-art of Packet Radio.

The officers of the St. Louis Area Packet Radio Club are:

Pete Eaton, WB9FLW	President
Bill Reed, WDOETZ	Vice-president
Ed Dillon, KAOAYO	Treasurer
Gus Kuether, W90FZ	Secretary

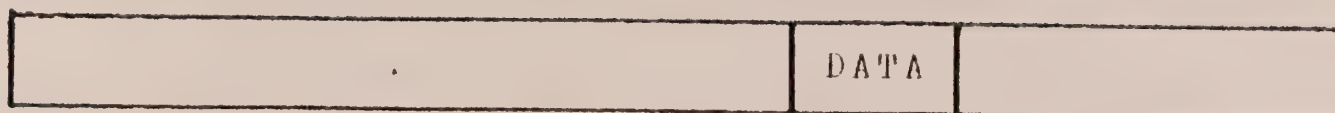
SLAPR PROTOCOL is published monthly by the ST LOUIS AREA PACKET RADIO CLUB for the education and enjoyment of its members. Articles and materials found in this newsletter may be copied in their entirety or part. The purpose is to disseminate information about packet radio. It would be greatly appreciated if the material would be referenced and credit given to the author and to SLAPR PROTOCOL. Please address any inquiries to the editor, Gus Kuether, W90FZ, at 1309 Gloucester Dr., Edwardsville, IL 62025.

	GATEWAY	
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station to access long distance communications

From R.A.T.S. we get the announcement of the installation of a Vancouver-style packet repeater on 146.535 MHz. It runs three watts of transmitter power from the Little Falls, NJ location. The repeater consists of a Vancouver TNC, a modem, and a KDK 2016 transceiver. The system receives data off the air. After error and route checking it retransmits the packet on the same frequency. They also support two bulletin board systems and offer bulletin board software for TRS 80 Models I & III.

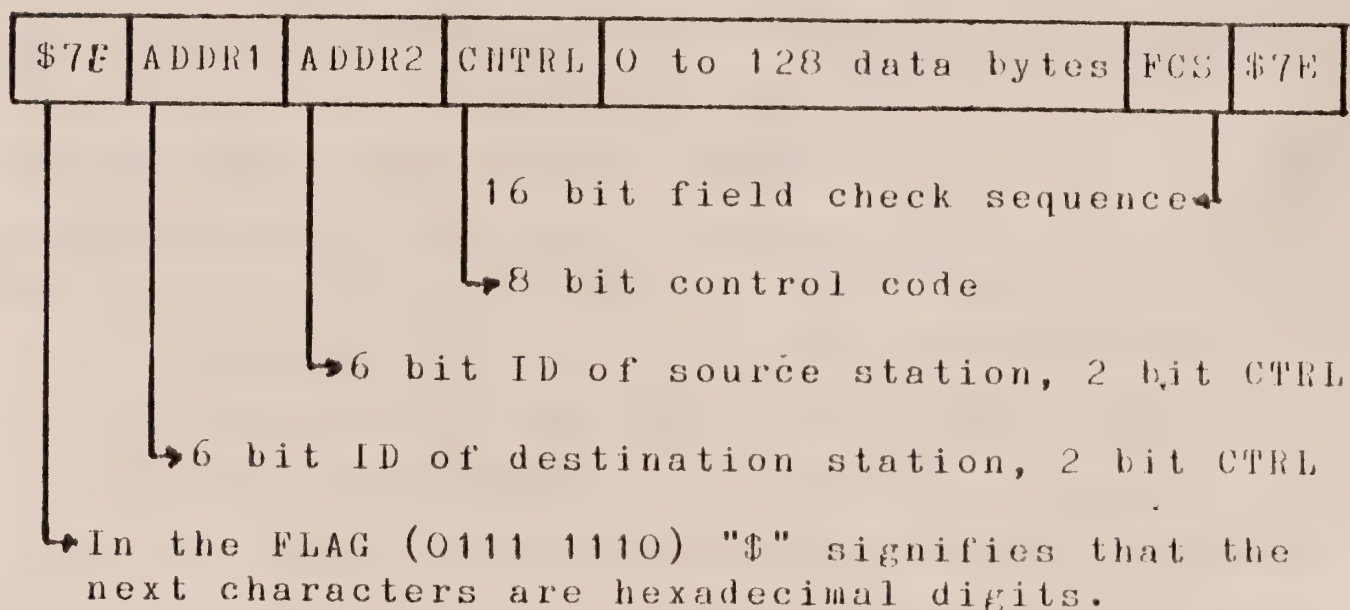
taken from the NJ R.A.T.S. COLUMN BY WB2CAM
JULY-AUGUST 1982 AMRAD NEWSLETTER



the field that contains the message being sent

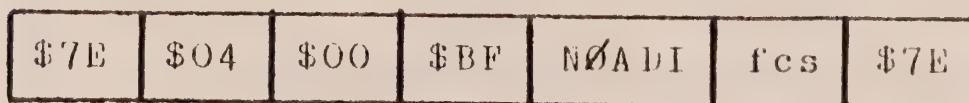
connect PACKET PRIMER

The "System Reference Manual for the TAPR TNC" promises to be an excellent document and will be quite explicit in describing the protocol used in the TNC. The following sequences are from a preliminary version of that document. Keep in mind that the general format of a packet is always the same:



What follows is a series of example exchanges. It is assumed that the digipeater is located at the NCS.

LOGIN SEQUENCE



(request address)

The login sequence (packet shown above) is used by a station to get a dynamic address assigned to it. If there is no response to this "REQUEST ADDRESS" the station operator will be given a chance to

become the NCS. Remember that the 6 high order bits of the address bytes contain the address. The NCS always assumes address 0. This is seen in the second address byte as \$00.

\$7E	\$00	\$04	\$11	fcs	\$7E
------	------	------	------	-----	------

(positive acknowledgement(ACK))

All transmissions are to get an ACK (shown above) if received without error. Note that there is no data contained in this packet. Negative acknowledgement (NAK) is always implied by no response.

\$7E	\$FF	\$04	\$F7	SYSTAT	fcs	\$7E
------	------	------	------	--------	-----	------

(broadcast SYSTAT)

SYSTAT is a SYstem STATus Table which contains, among other things, everyones callsign and corresponding one byte address. A SYSTAT will be broadcast everytime a new one-byte address is assigned to anyone.

Any packet which is to be sent to all stations in the LAN will have the destination address of 63. It is shown above in the first address byte as \$FF. Broadcast packets are not responded to at all.

SENDING A PACKET (DIRECT)

\$7E	XXXXXX00	YYYYYY00	\$10	data	fcs	\$7E
------	----------	----------	------	------	-----	------

(send packet)

The destination address is XXXXXX (binary). The source station address is YYYYYY (binary).

\$7E	YYYYYY00	XXXXXX00	\$11	fcs	\$7E
------	----------	----------	------	-----	------

(positive acknowledgement (ACK))

The destination and source adrs are reversed.

SENDING A PACKET (through a digipeater)

\$7E	XXXXXX10	YYYYYY00	\$10	data	fcs	\$7E
------	----------	----------	------	------	-----	------

(send packet)

The only difference between this packet and the one sending a data packet direct is the "digipeater" bit in the destination address field. The destination station will not respond with ACK even if it sees the packet; it will throw the packet away. The digipeater will accept the packet and respond with ACK.

\$7E	YYYYYY00	\$04	\$11	fcs	\$7E
------	----------	------	------	-----	------

(positive acknowledgement (ACK))

Note this time the ACK came from the digipeater.

\$7E	XXXXXX00	YYYYYY10	\$10	data	fcs	\$7E
------	----------	----------	------	------	-----	------

(digipeater retransmits the packet)

Note that the digipeat bit is no longer on in the destination address. Now the destination station will accept the packet and respond with ACK. Also note that the origination station address reflects the original originator of the data packet. This is so the destination station will know who it is from. In addition, the digipeat bit is on in the origination address field so that the destination station will know who to ACK to.

\$7E	\$04	XXXXXX00	\$11	fcs	\$7E
------	------	----------	------	-----	------

(positive acknowledgement (ACK))

Note that the ACK is sent to the digipeater.

SENDING A PACKET (through digipeater with end-to-end ACK)

\$7E	XXXXXX10	YYYYYY10	\$10	data	fcs	\$7E
------	----------	----------	------	------	-----	------

(send packet)

The only difference between this packet and the one sending a data packet through a digipeater without end-to-end ACK is that the origination address field has the digipeat bit on. This informs the digipeater that it is to send a final ACK to the original origination station after receiving ACK from the final destination station.

\$7E	YYYYYY00	\$04	\$11	fcs	\$7E
------	----------	------	------	-----	------

(positive acknowledgement (ACK))

This is the same as without end-to-end ACK.

\$7E	XXXXXX00	YYYYYY10	\$10	data	fcs	\$7E
------	----------	----------	------	------	-----	------

(digipeater repeats the packet)

This is the same as without end-to-end ACK.

\$7E	\$04	XXXXXX00	\$11	fcs	\$7E
------	------	----------	------	-----	------

(positive acknowledgement (ACK))

This is the same as without end-to-end ACK, however the digipeatr has remembered that it is to send a final ACK to the origination station as well as remembering the address of the origination station.

\$7E	YYYYYY00	0000110	\$11	fcs	\$7E
------	----------	---------	------	-----	------

(positive acknowledgement (ACK))

The original origination station has been sitting around waiting for this final ACK. Note that the

origination address field contains the NCS address as well as having the digipeat bit on.

CW IDENTIFICATION

\$7E	\$FF	\$04	\$B7	fcs	\$7E
------	------	------	------	-----	------

(cw id)

This is a control packet for everyone's TNC instructing it to do a CW ID.

LOGOUT SEQUENCE

\$7E	\$04	YYYYYY00	\$1F	fcs	\$7E
------	------	----------	------	-----	------

(request logout)

Not much to explain here.

\$7E	YYYYYY00	\$04	\$11	fcs	\$7E
------	----------	------	------	-----	------

(positive acknowledgement (ACK))

This should look familiar.

\$7E	\$FF	YYYYYY00	\$93	fcs	\$7E
------	------	----------	------	-----	------

(broadcast to everyone remaining)

This is so that everyong can delete this address from their copy of the SYSTAT table.

\$7E	\$FF	\$04	\$87	fcs	\$7E
------	------	------	------	-----	------

(cw id)

Since the station checking out must CW ID, everyone might as well do so to allow the NCS to reset the 10 minute timer.

disconnect WDOETZ, PILL

SLAF PROTOCOL
SE. LOUIS AREA PACKET RADIO CLUB
1309 GLOUCESTER DR.
EDWARDSVILLE, IL 62025

MAGNUSKI, HANK
311 STANFORD AVE

MENLO PARK CA 94025

TEXT MEETING AUGUST 30, 1982
GRAND EDITION ROOM, 7TH FLOOR
LEACOCKS HOSPITAL 7:30 PM
6150 OAKLAND, 40 AT HAMPTON
ACROSS FROM FOREST PARK
ST. LOUIS, MO

